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Effects of task and contextual constraints on place kicking performance at the 2015 Rugby World Cup

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Place kicks in Rugby Union present opportunities to score points without the spatiotemporal dynamics of open play, but are typically executed under varying task and contextual performance constraints within competitive environments. The average success percentage of place kicks in international Rugby Union (2002 - 2011) was 72%, however, success percentage dropped to 61% in instances when the match outcome hinged on success of a single place kick (Quarrie & Hopkins, 2015). To further the current understanding, we analyzed place kick performance from the 2015 Rugby Union World Cup under different task and contextual constraints. Data were collected from television broadcasts for each place kick. In addition to recording the outcome of each kick, contextual information recorded included time of the kick in the match, score margin at the time of the kick, and the outcome of the kicker's previous kick. The recorded task constraints included distance (m) and lateral angle (deg) to the goalposts. A binomial logistic regression model revealed that distance ($p < .001$) and angle ($p = .001$) to goalposts were significant predictors of place kick outcome. Furthermore, the success percentage of kickers who had missed their previous kick was 7% lower than kickers who had scored their previous kick, and the success percentage of place kicks was 8% lower than the tournament average in the final 10 minutes before half-time. Our findings highlighted the influence of varying task difficulty on success percentage of place kicking and the role that contextual constraints may have on elite kickers during competitive sports performance. Future research should investigate the interaction of key constraints on place kicking performance and could consider the experiential knowledge of kickers and coaches to help achieve this. These findings could help performance analysts, sport scientists and coaches to design practice environments which successfully simulate the relevant demands of competitive performance environments.